M/053/005

jbr CONSULTANTS GROUP

GEOLOGY ENGINEERING ENVIRONMENT HYDROLOGY

July 26, 1991

Mr. Ken Kluksdahl
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Tenneco Minerals Company
P.O. Box 2650
St. George, Utah 84770

Ms. Debra Brannum
Environmental Services Manager
Tenneco Minerals Company
P.O. Box 281300
Lakewood, CO 80288

RE: Report of Results of Surface and Groundwater Sampling and Analysis Following March, 1991 Emergency Discharge Events of Treated Process Solution

Dear Mr. Kluksdahl and Ms. Brannum:

This letter and the attached tables contain our report of the results of the water quality sampling and analysis that were conducted by Tenneco Minerals Company, JBR Consultants, and the Utah Division of Environmental Health (DEH). The sampling was conducted in connection with the two emergency discharge events that occurred at the Goldstrike Mine on March 1, and March 4, 1991.

These emergency discharge events involved the discharge of treated process solution from the process water pond to the mine's sediment pond. The discharges were caused by excess water from an extraordinary precipitation event. This precipitation

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event substantially exceeded the 100 year, 24-hour approved design capacity of the three process ponds. For a detailed description of the discharge events, please refer to the attached March 19, 1991 letter that Tenneco Minerals submitted to the Utah Bureau of Water Pollution Control.

Process solutions were treated prior to being discharged to reduce the concentration of cyanide. After treatment, the contents of the treatment tank were discharged to the sediment pond, as allowed in accordance with the permit from the Bureau of Water Pollution Control to receive solutions during emergency overflow events.

Tenneco Minerals conducted extensive surface water sampling at the discharge port, the sediment pond and several other downstream locations during and after the discharge events. The samples were analyzed for free cyanide using an on-site colorimetric analyzer. Several of these samples were sent to an offsite independent laboratory for analysis for cyanide, metals and other general parameters.

Tenneco Minerals also contracted with an independent consulting firm, JBR Consultants, to conduct additional sampling following the discharge events. Furthermore, the DEH conducted sampling at numerous downstream locations. This data is also presented in this report.

Tenneco Minerals' actions to treat the solution and control the discharge, along with the large dilution from the storm events, resulted in a discharge that Tenneco Minerals believes posed no danger to public health or the environment. The results of the sampling data presented herein also support this conclusion.

GENERAL SITE DESCRIPTION

The Goldstrike Mine is located approximately 35 miles northwest of St. George, Utah. The Goldstrike Mine, downstream drainages and the sampling locations are displayed on Figure 1. Goldstrike is located predominantly in a tributary of the Arsenic Gulch watershed which is tributary to the East Fork of the Beaver Dam Wash. Arsenic Gulch enters the East Fork of the Beaver Dam Wash about 1/2 mile downstream from the mine area. The East Fork of the Beaver Dam Wash drains all of the west side of the Bull Valley Mountains and is tributary to Beaver Dam Wash, which eventually flows into the Virgin River. The East Fork of the Beaver Dam Wash is intermittent or ephemeral in the vicinity of Arsenic Gulch but is perennial several miles upstream of the confluence, as well as approximately six miles downstream of the confluence. Therefore, the East Fork of Beaver Dam Wash neither supports aquatic life nor presents a drinking water source in the vicinity of the confluence with Arsenic Gulch.

ANALYTICAL TABLES

The ground water and surface water data are presented in three tables which are described below. Sample locations are shown on the attached sample location map.

Table 1

Table 1 presents the results of Tenneco Minerals' water quality analyses using an on-site HACH free cyanide analyzer. These samples were collected at five sampling locations (A through E) and analyzed during and immediately following the discharge events. The results are presented chronologically by sample point in a multi-page table. In addition, the graphs display free cyanide concentration over time at each of the five sampling locations.

Table 2

Table 2 presents the independent laboratory analytical results of sampling conducted by Tenneco, JBR Consultants and DEH. Sampling was conducted at locations A, B, C, D, E, at other points downstream of the Main Fork of the Beaver Dam Wash, and, in the case of DEH sampling, as far downstream as the Virgin River. The sample results are presented in chronological order by sample location.

The samples were analyzed for cyanide, metals and general chemistry parameters. The federal primary drinking water standards (which are the same as Utah's maximum contaminant levels for ground water) and secondary drinking water standards are also presented on the tables for comparison purposes. EPA's proposed drinking water standard for total cyanide is 0.2 mg/l.

The samples collected by Tenneco Minerals and JBR Consultants were preserved with the proper preservatives and packed in ice during transit to the laboratory. JBR submitted an equipment blank sample for quality control purposes.

Table 3

Table 3 presents the results of ground water sampling from monitoring wells UG-1 and DG-1 by Tenneco Minerals from January 10, 1991 through March 28, 1991. The DEH collected a water sample from DG-1 on March 6, 1991 shortly after the second discharge event; however, this sample was either not analyzed, or the results have not been sent to Tenneco. The results of JBR's sample taken on March 8, 1991 are not presented in this table because insufficient sample volume was available for analysis under standard laboratory procedures.

SUMMARY OF ANALYTICAL RESULTS

The results of the analytical data presented in Tables 1 through 3 are summarized below.

Tenneco Minerals On-site Free Cyanide Analysis of Surface Water Samples (Table 1)

The results of these analyses are displayed on Table 1 and the supporting graphs. The results generally show a decrease in free cyanide concentration with time and distance from the discharge port. The average concentration of free cyanide in the East Fork of the Beaver Dam Wash (point E) location from March 2-7, 1991 was 0.07 mg/l. The concentrations of free cyanide at sample point E were essentially at the instrument's detection level of 0.01 by March 7, 1991. These free cyanide results generally correlated very well with the split samples that were sent to an independent laboratory for analysis, the results of which are listed in Table 2.

Independent Laboratory Analyses of Surface Water Samples (Table 2)

Sample Point A.

On March 2, 1991, total cyanide concentrations at this sample location in the ephemeral channel below the process water pond were 12.2 mg/l at 1325 hours. Two hours later, the total cyanide levels were 0.684 mg/l. Like the free cyanide values presented in Table 1, the total cyanide values at this location were extremely variable over time.

Sample Point B.

This sample location is at the mine's sediment pond. On March 2, 1991, the total cyanide concentration in the sediment pond at 0840 and 2326 hours during the first discharge event were 0.394 mg/l and 0.469 mg/l, respectively. On March 6, 1991 Tenneco, JBR and DEH collected samples for analyses. DEH's sample contained no detectable cyanide, Tenneco Minerals' sample contained 0.328 mg/l total cyanide and JBR's sample contained 2.46 mg/l total cyanide. By March 8, 1991 a JBR sample reported a total cyanide concentration of 0.118 mg/l which is less than EPA's proposed drinking water standard of 0.2 mg/l total cyanide. Tenneco Minerals' sample results on April 8 and 11 contained 0.040 mg/l and 0.03 mg/l, respectively of total cyanide, which is even lower.

JBR's March 6 sample results for metals at this location show no exceedences of primary drinking water standards for the tested constituents except for selenium, silver and nitrate. The DEH sample result also indicated elevated concentrations of selenium, nitrate, and mercury (0.032 mg/l). Total or dissolved mercury was not detected in any samples taken by JBR; therefore, the mercury concentrations reported in the DEH samples cannot be corroborated by other sampling results. By March 8, no exceedences

of primary drinking water standards occurred except for selenium and nitrate. Tenneco Minerals' April 11 sample contained no constituents above the primary drinking water standards.

Sample Point C.

This sample location is at the seepage point at the sediment dam. Samples taken on March 2, 1991 showed a total cyanide value of 3.78 mg/l. A sample taken on March 6 by JBR had a total cyanide concentration of 1.13 mg/l. DEH apparently sampled this location on March 7 (the DEH sample location description is not clear) at 1400 hours. The analytical results contained no detectable cyanide. JBR's sampling at this location on March 8 at 1220 hours detected an extremely low total cyanide concentration of 0.048 mg/l, which is less than EPA's proposed drinking water standard. Additional sampling conducted by the DEH on April 3 indicated no detectable cyanide at this location while sampling by Tenneco Minerals on April 3 again detected an extremely low level of 0.05 mg/l total cyanide.

With respect to metals, all tested constituents were below primary drinking water standards in JBR's March 6 sampling except for arsenic, selenium, and silver which were slightly elevated. JBR's March 8 sampling indicated only elevated concentrations of nitrate and selenium. Tenneco Minerals' April 3 sampling did not contain any constituents above EPA's primary drinking water standards.

Sample Point D.

Sample location D is located just above the confluence of Arsenic Gulch and the East Fork of Beaver Dam Wash. Tenneco Minerals' samples taken on March 2 reported concentrations of total cyanide ranging from 0.205 to 1.71 mg/l. JBR sampled this location on March 6 and reported a total cyanide concentration of 3.64 mg/l. The precise location of the DEH sampling is not known; however, a March 6 sample showed a total cyanide value of 0.168 mg/l, which is less than EPA's proposed drinking water standard of 0.2 mg/l.

Elevated concentrations of arsenic and silver were detected in Tenneco Minerals March 2 sample taken at 0629 hours. On March 6 the JBR and DEH samples reported no exceedences of primary drinking water standards except for selenium and silver (the DEH sample reported silver at the drinking water standard). In addition, DEH detected slightly elevated concentrations of total arsenic, mercury, and nitrate; however, JBR did not detect any dissolved concentrations of arsenic or mercury.

Sample Point E.

Sample point E is located on the East Fork of the Beaver Dam Wash 6000 feet downstream from the confluence with Arsenic Gulch. Laboratory analyses for total

cyanide of Tenneco Minerals' March 2, 4, and 5, 1991 samples showed a range of <0.005 to 7.0 mg/l. The 7.0 mg/l total cyanide value reported on a March 5 sample is inconsistent with values reported from other samples and may be in error. JBR's sample at this site on March 6 was reported to contain concentrations of 0.029 mg/l total cyanide, which is significantly less than EPA's proposed drinking water standard.

No exceedences of drinking water standards for metals were reported in any of the samples. By March 8, based on analysis of samples taken by JBR, there were no detectable cyanide concentrations at this location.

Additional Downstream Sampling and Analysis.

Samples were taken by JBR and DEH over a period of March 6 through April 3, at the East Fork of the Beaver Dam Wash and in Beaver Dam Wash above and below its confluence with the East Fork. DEH also took samples in the Beaver Dam Wash above its confluence with the Virgin River and in the Virgin River below its confluence with Beaver Dam Wash. No evidence of any impact from the process solution discharge events was found in any of the analyses of these samples.

Mine Area Background Samples.

Samples were taken by both JBR and DEH in the East Fork of the Beaver Dam Wash above the confluence with Arsenic Gulch. This was at a location that did not receive storm runoff water from the mine's sediment pond and therefore is considered a background sample for comparison purposes. In addition, JBR sampled a small pond of water in the Arsenic Gulch channel above its confluence with the unnamed sediment pond drainage. This water remained after the intense storm runoff had ceased.

Ground Water Monitoring Well Results (Table 3).

The March 28 sample result from downgradient well DG-1 indicate no evidence of any impact upon ground water from the discharge events. A more detailed ground water investigation is now in progress to more fully assess the impact, if any, of the discharge events upon the groundwater.

CONCLUSIONS

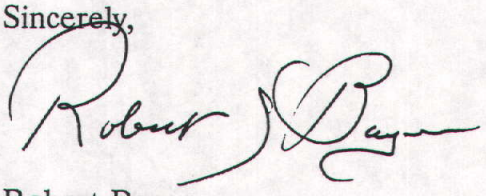
An extensive sampling program was conducted by Tenneco Minerals and JBR Consultants during and following the two emergency discharge events. In addition, the DEH also conducted sampling at numerous downstream locations.

The results of the surface water investigation in Beaver Dam Wash and its tributaries following the emergency discharge events indicate that no exceedences of applicable standards for cyanide or other metals occurred in the main Beaver Dam

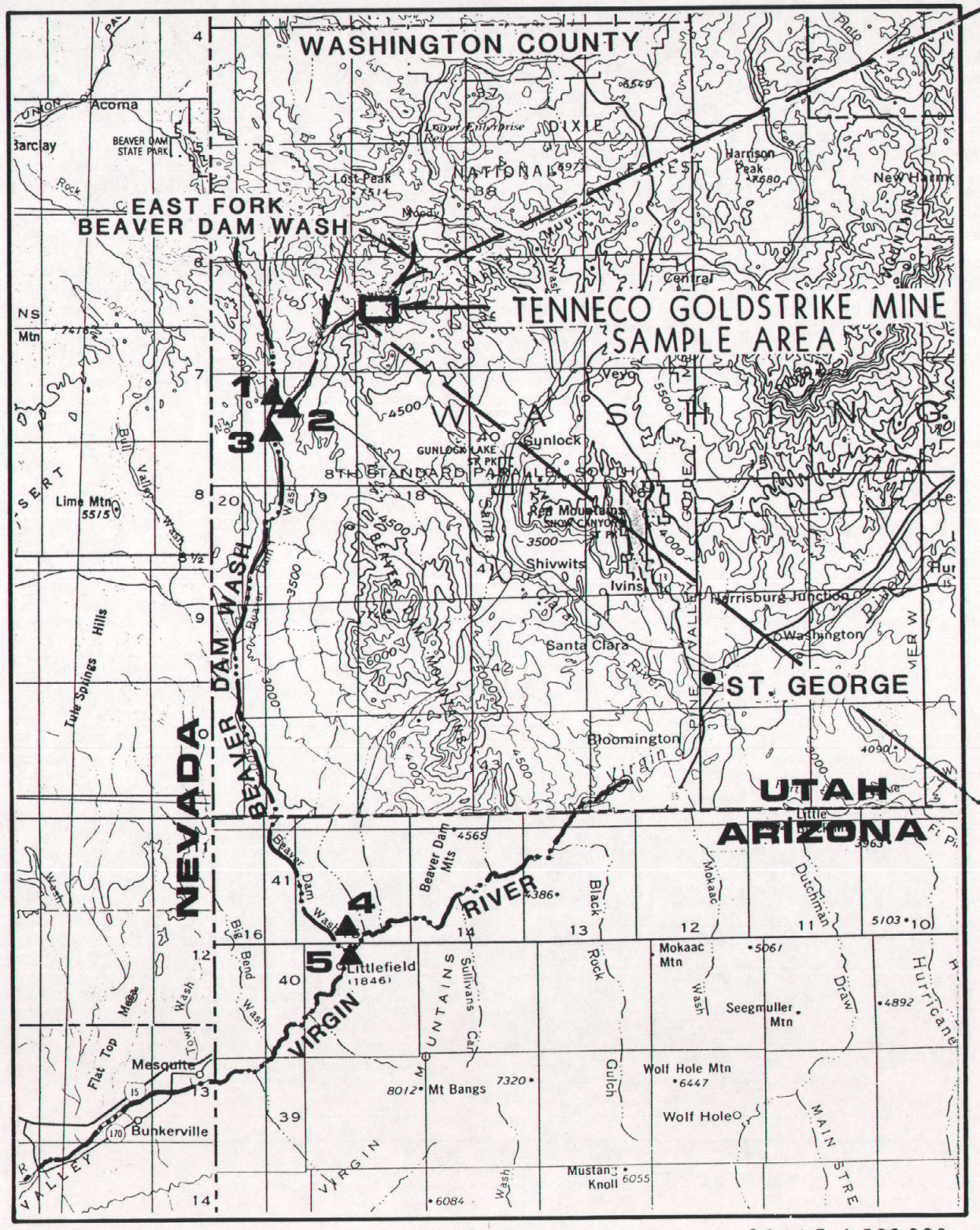
Wash. While there were slightly elevated concentrations of some constituents in Arsenic Gulch and the upper East Fork of the Beaver Dam Wash during and immediately following the discharge events, samples taken in the East Fork one week following the discharges showed no elevated readings. The Arsenic Gulch and East Fork of the Beaver Dam Wash at these locations are intermittent or ephemeral streams; therefore, they do not support aquatic life and do not represent a source of drinking water. The results of this sampling and analytical programs revealed no evidence that adverse impact to public health or the environment resulted from the discharge events.

No evidence of any ground water contamination has been detected to date; moreover, the relatively low concentrations of cyanide and metals found in the surface water samples suggest that no impact is likely to occur. The results of the groundwater investigation that is currently being conducted will be compiled and submitted to the Utah Bureau of Water Pollution Control at a later date.

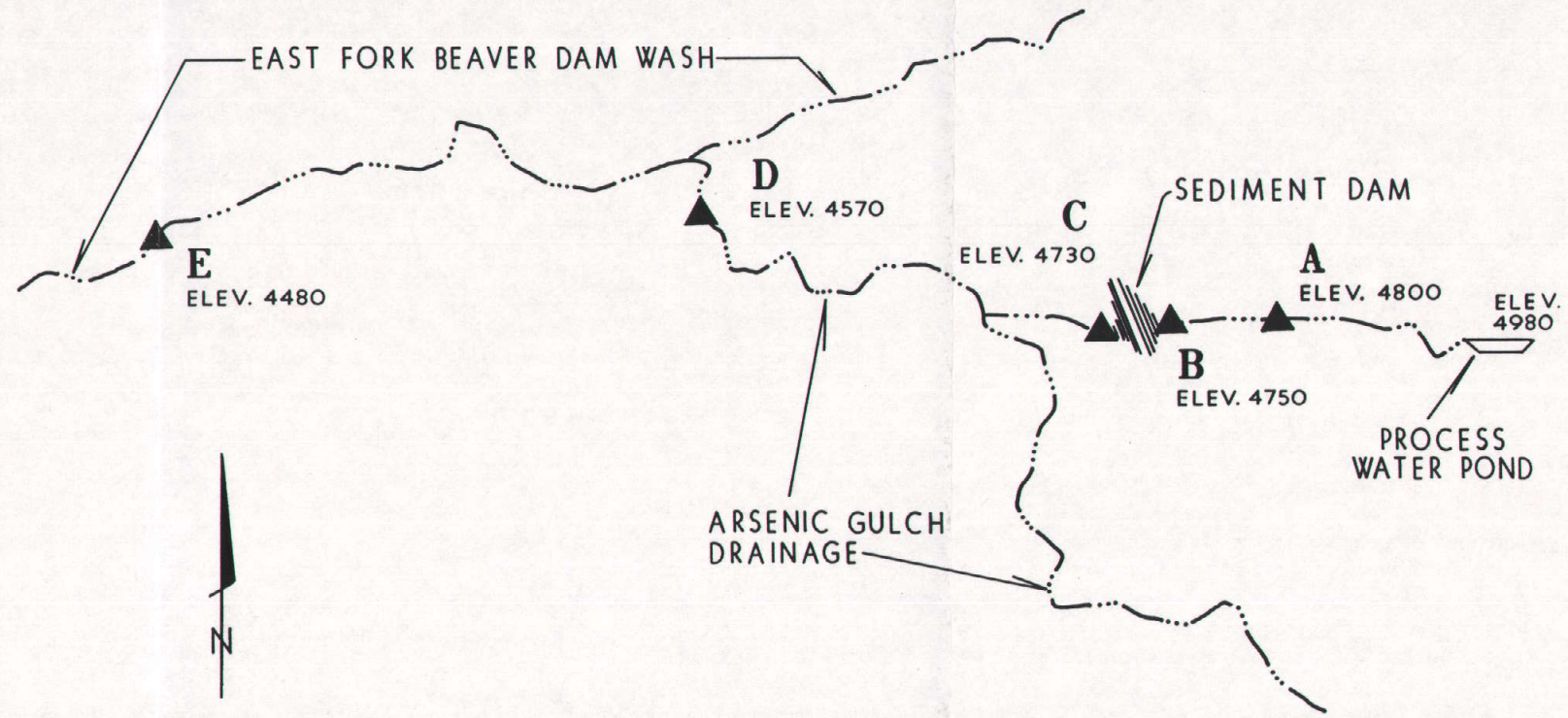
Sincerely,



Robert Bayer
Vice President



DOWNSTREAM SAMPLE SITE MAP



MINE AREA SAMPLE MAP

1 Beaver Dam Wash, above confluence with East Fork
2 East Fork above Beaver Dam Wash
3 Beaver Dam Wash, below confluence with East Fork
4 Beaver Dam Wash, above confluence with Virgin River
5 Virgin River, below confluence with Beaver Dam Wash

TENNECO MINERALS
GOLDSTRIKE

FIGURE 1
STREAM SAMPLE LOCATIONS

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SALT LAKE CITY, UTAH

7/17/91

TABLE I

RESULTS OF TENNECO FREE CYANIDE ANALYSES

Table 1. CN discharge

DATE	DISCHARGE TIME	FLOW INTO SEDIMENT POND A FREE CN	SEDIMENT POND B FREE CN	Site C FREE CN	Site D FREE CN	Site E FREE CN
3/1	1430					
	1500	3.8	3.2	0.4	0.05	
	1600	4.7	4.8		0.07	
	1700	8	6.4	0.32	0.06	
	1800		0.45	2		
	1900			2	0.26	
	2000	5	0.52	4.4	0.31	
	2100	16		2.6	0.4	
	2200	14	3.8	5.1		
	2300	14	4.9			
3/2	0				0.8	
	300	16	6.2	1.5	1.3	0.2
	400	16	9.2	10	1.1	0.26
	500	0.02	9			0.17
	600	2.4	3.3	3		0.15
	700			4.8		
	800	1.8	0.01	0.05		0.24
	900			5		
	1100	0.01	0.05	0.12		0.05
	1300	9.2	0.08		0.04	0.01
	1500	0.01	1.6	3.9		0.05
	1800			17		0.05
	2100	0.12	0.03	0.05	1.1	0.34
	2300	<0.01	0.02	0.04	0.03	0.03
3/3	200	3	0.02	0.02	0.02	0.01
	300				0.03	0.02
	500			0.4		0.02
	700				0.1	0.05
	900			0.99		0.01
	1100				0.29	0.05
	1300					0.02
3/4	2030	0.8	2.25			
	2320	0.4	1.8	1.3		
3/5	200	0.05	1.2			0.08
	500	0.1	1.3	0.28		0.05
	1400	0.45	1.1	0.95	0.75	0.01
	1600	0.42	0.9	0.95	0.3	<0.01
	1800	0.4	1	0.92	0.25	<0.01
	2000	0.68	1.3	1.1	0.71	0.04
3/6	800		0.95		0.72	0.01
	1000	0.45	0.92	0.81	0.93	0.01
	1100	0.34	0.89	0.66	0.83	0.03
	1300	0.4	0.82	0.01	0.81	0.28
	1600	0.35	0.69	0.48	0.73	0.03
	2000	0.3	0.35	0.27	0.8	0.01
3/7	0	0.37	0.22	0.3	0.75	0.02
	400	0.3	0.3	0.26	0.71	0.05
	800	0.32	0.22	0.01	0.01	0.01
	1600	0.31	0.22	0.2	0.54	0.02
3/8	1200	0.31	0.25	0.19		0.01

TABLE 2

RESULTS OF LABORATORY ANALYSES FOR WATER QUALITY PARAMETERS

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco A 3/2: 1325		Tenneco A 3/2: 1525	
		Total	Diss.	Total	Diss.
Arsenic	0.05				
Barium	1				
Cadmium	0.01				
Chloride *	250				
Chromium (hex)	0.05				
Copper *	1				
Fluoride *	4				
Iron (tot)*	0.3				
Lead	0.05				
Manganese *	0.05				
Mercury	0.002				
Nitrate	10				
Selenium	0.01				
Silver	0.05				
Sulfate *	1000				
Tot Diss Solids *	2000				
Turbidity	5				
Zinc *	5				
pH *	6.5-8.5				
Cyanide (T)		12.2		0.684	
Cyanide (Free)		12.2		0.024	
Cyanide (WAD)		12.2		0.027	
Alkalinity					
Ammonia					
Bicarbonate					
Boron					
Calcium					
Carbonate					
Chromium (diss)					
Chromium (Tot)					
Conductivity					
Hardness					
Hydroxide					
Iron (diss) *					
Magnesium					
Molybdenum					
Nickel					
Nitrite					
Phosphate					
Potassium					
Silica					
Sodium					
Vanadium					

* The standard noted is a Secondary Stnd.

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco B 3/2: 840		Tenneco B 3/2: 2326	
		Total	Diss.	Total	Diss.
Arsenic	0.05				
Barium	1				
Cadmium	0.01				
Chloride *	250				
Chromium (hex)	0.05				
Copper *	1				
Fluoride *	4				
Iron (tot)*	0.3				
Lead	0.05				
Manganese *	0.05				
Mercury	0.002				
Nitrate	10				
Selenium	0.01				
Silver	0.05				
Sulfate *	1000				
Tot Diss Solids *	2000				
Turbidity	5				
Zinc *	5				
pH *	6.5-8.5				
Cyanide (T)		0.394		0.469	
Cyanide (Free)		0.015		0.032	
Cyanide (WAD)		0.042		0.046	
Alkalinity					
Ammonia					
Bicarbonate					
Boron					
Calcium					
Carbonate					
Chromium (diss)					
Chromium (Tot)					
Conductivity					
Hardness					
Hydroxide					
Iron (diss) *					
Magnesium					
Molybdenum					
Nickel					
Nitrite					
Phosphate					
Potassium					
Silica					
Sodium					
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco B 3/6: 800		DEH Site B 3-6-91: 1330	
		Total	Diss.	Total	Diss
Arsenic	0.05	<0.01		<0.005	
Barium	1	<0.139		0.089	
Cadmium	0.01	<0.01		<0.001	
Chloride *	250			949.9	
Chromium (hex)	0.05			0.005	
Copper *	1	0.042		0.1	
Fluoride *	4				
Iron (tot)*	0.3			0.085	
Lead	0.05	<0.01		<0.005	
Manganese *	0.05	0.011		0.02	
Mercury	0.002			0.0326	
Nitrate	10			12.0	
Selenium	0.01	0.087		0.045	
Silver	0.05	0.175		0.045	
Sulfate *	1000			910.0	
Tot Diss Solids *	2000			3140	
Turbidity	5			25.0	
Zinc *	5	0.239		0.14	
pH *	6.5-8.5			9.4	
Cyanide (T)		0.328		<0.02	
Cyanide (Free)		0.038		<0.02	
Cyanide (WAD)		0.041			
Alkalinity				44	
Ammonia				38.0	
Bicarbonate				26	
Boron		0.079			
Calcium				410	
Carbonate				13	
Chromium (diss)					
Chromium (Tot)		<0.01			
Conductivity				4,530	
Hardness				1039.4	
Hydroxide				0	
Iron (diss) *					
Magnesium				4	
Molybdenum					
Nickel		0.499			
Nitrite				<0.01	
Phosphate					
Potassium				9	
Silica					
Sodium				590.0	
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	JBR GS - 1 Site B 3/6: 1510		JBR GS - 14 Site B 3/8: 1300	
		Total	Diss	Total	Diss.
Arsenic	0.05		<0.01	<0.01	<0.01
Barium	1		0.13	0.106	0.106
Cadmium	0.01		<0.01	<0.01	<0.01
Chloride *	250	997		992	
Chromium (hex)	0.05			<0.01	
Copper *	1		0.05	<0.02	<0.02
Fluoride *	4	4.43		2.13	
Iron (tot)*	0.3	0.36		0.023	0.023
Lead	0.05		0.04	<0.01	<0.01
Manganese *	0.05		<0.01	<0.01	<0.01
Mercury	0.002		<0.002	<0.0002	<0.0002
Nitrate	10	11		10.9	
Selenium	0.01		0.09	0.076	0.072
Silver	0.05		0.15	<0.01	<0.01
Sulfate *	1000	874		859	
Tot Diss Solids *	2000	3,160		3,150	
Turbidity	5	38		100	
Zinc *	5		0.058	0.103	0.017
pH *	6.5-8.5	9.98		8.04	
Cyanide (T)		2.46		0.118	
Cyanide (Free)		1.22		0.054	
Cyanide (WAD)		1.52		0.114	
Alkalinity		175		131	
Ammonia		36.8		35.4	
Bicarbonate		177		160	
Boron			0.025	0.023	0.023
Calcium		178		292	
Carbonate		17.9		0	
Chromium (diss)			0.029		
Chromium (Tot)				<0.01	<0.01
Conductivity		4,530		4,410	
Hardness		458		1,035	
Hydroxide		0		0	
Iron (diss) *			0.088		
Magnesium			3.2	64.8	
Molybdenum					
Nickel			0.87	0.055	0.055
Nitrite		1.82		2.43	
Phosphate		0.047		0.046	
Potassium		13.4		16.8	
Silica		6.1		2.4	
Sodium		604		598	
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco Site B 4-8-91:		Tenneco Site B 4-11-91: 1600	
		Total	Diss	Total	Diss
Arsenic	0.05	<0.01		<0.01	
Barium	1	<0.01		<0.01	
Cadmium	0.01	<0.01		<0.01	
Chloride *	250	103		35.7	
Chromium (hex)	0.05	<0.01		<0.01	
Copper *	1	0.04		0.038	
Fluoride *	4	0.7		0.38	
Iron (tot)*	0.3	3.92		3.55	
Lead	0.05	<0.01		<0.01	
Manganese *	0.05	0.07		0.083	
Mercury	0.002	<0.0002		<0.0002	
Nitrate	10	11.6		2.9	
Selenium	0.01	<0.002		<0.002	
Silver	0.05	<0.01		<0.01	
Sulfate *	1000	432		255	
Tot Diss Solids *	2000	1100		545	
Turbidity	5	22		19	
Zinc *	5	0.11		0.073	
pH *	6.5-8.5	8.13		7.9	
Cyanide (T)		0.04		0.03	
Cyanide (Free)		0.02		<0.02	
Cyanide (WAD)		0.022		<0.02	
Alkalinity		174			
Ammonia		4.23			
Bicarbonate		212			
Boron		0.44			
Calcium		135			
Carbonate		0			
Chromium (diss)					
Chromium (Tot)		<0.01		<0.01	
Conductivity		1428			
Hardness		656			
Hydroxide		0			
Iron (diss) *					
Magnesium		60.5			
Molybdenum					
Nickel		<0.01		<0.01	
Nitrite		0.308			
Phosphate		0.061			
Potassium		5.6			
Silica			8.9		
Sodium		61.4			
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco C 3/2: Total	Tenneco C 3/2: Diss.	JBR GS - 2 Site C Sed Dam Seep 3/6: 1525 Total	JBR GS - 2 Site C Sed Dam Seep 3/6: 1525 Diss
Arsenic	0.05				0.26
Barium	1				0.43
Cadmium	0.01				<0.01
Chloride *	250			967	
Chromium (hex)	0.05				
Copper *	1				<0.05
Fluoride *	4			29.3	
Iron (tot)*	0.3			22.2	
Lead	0.05				<0.01
Manganese *	0.05				0.288
Mercury	0.002				<0.002
Nitrate	10			9.22	
Selenium	0.01				0.12
Silver	0.05				0.15
Sulfate *	1000			892	
Tot Diss Solids *	2000			3,130	
Turbidity	5			410	
Zinc *	5				0.75
pH *	6.5-8.5			8.64	
Cyanide (T)		3.78		1.13	
Cyanide (Free)		3.46		0.76	
Cyanide (WAD)		3.51		0.91	
Alkalinity				266	
Ammonia				36.6	
Bicarbonate				310	
Boron					0.043
Calcium				185	
Carbonate				7	
Chromium (diss)					<0.01
Chromium (Tot)					
Conductivity				4,430	
Hardness				486	
Hydroxide				0	
Iron (diss) *					<0.01
Magnesium					5.9
Molybdenum					
Nickel					0.64
Nitrite				1.68	
Phosphate				0.97	
Potassium				13.1	
Silica				23.3	
Sodium				574	
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	DEH Tenneco Sed Pond AB CNFL W E FK BDW 3-7-91: 1400		JBR GS - 13 Site C 3/8: 1220	
		Total	Diss.	Total	Diss.
Arsenic	0.05			<0.01	<0.01
Barium	1			0.117	0.117
Cadmium	0.01			<0.01	<0.01
Chloride *	250			1,000	
Chromium (hex)	0.05			<0.01	
Copper *	1			<0.02	<0.02
Fluoride *	4			4.26	
Iron (tot)*	0.3			0.023	0.023
Lead	0.05			<0.01	<0.01
Manganese *	0.05			0.114	0.114
Mercury	0.002			<0.0002	<0.0002
Nitrate	10			10.8	
Selenium	0.01			0.062	0.062
Silver	0.05			<0.01	<0.01
Sulfate *	1000			867	
Tot Diss Solids *	2000			3,200	
Turbidity	5			130	
Zinc *	5			0.062	0.045
pH *	6.5-8.5			9.08	
Cyanide (T)		<0.02		0.048	
Cyanide (Free)		<0.02		0.047	
Cyanide (WAD)				0.048	
Alkalinity				85.7	
Ammonia				34.8	
Bicarbonate				81.3	
Boron				0.015	0.015
Calcium				296	
Carbonate				11.4	
Chromium (diss)					
Chromium (Tot)				<0.01	<0.01
Conductivity				4,380	
Hardness				1,136	
Hydroxide				0	
Iron (diss) *					
Magnesium				88.5	
Molybdenum					
Nickel				0.054	0.054
Nitrite				2.08	
Phosphate				0.027	
Potassium				15.9	
Silica				4.4	
Sodium				562	
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco C 4/3: 1600 Total	Tenneco C 4/3: 1600 Diss.	DEH Tenneco Gold Strike Mine BL Pond 4-3-91: 1600 Total	DEH Tenneco Gold Strike Mine BL Pond 4-3-91: 1600 Diss
Arsenic	0.05	<0.01			
Barium	1	<0.01			
Cadmium	0.01	<0.01			
Chloride *	250	158			
Chromium (hex)	0.05	<0.01			
Copper *	1	0.035			
Fluoride *	4	0.96			
Iron (tot)*	0.3	3.62			
Lead	0.05	<0.01			
Manganese *	0.05	0.073			
Mercury	0.002	<0.0002			
Nitrate	10	2.52			
Selenium	0.01	<0.002			
Silver	0.05	<0.01			
Sulfate *	1000	588			
Tot Diss Solids *	2000	773			
Turbidity	5	20			
Zinc *	5	0.095			
pH *	6.5-8.5	7.98			
Cyanide (T)		0.05		<0.02	
Cyanide (Free)		0.045			
Cyanide (WAD)		0.048			
Alkalinity		162			
Ammonia		8.18			
Bicarbonate		197			
Boron		0.39			
Calcium		181			
Carbonate		0			
Chromium (diss)					
Chromium (Tot)		<0.01			
Conductivity		1372			
Hardness		880			
Hydroxide		0			
Iron (diss) *					
Magnesium		65.4			
Molybdenum					
Nickel		<0.01			
Nitrite		0.475			
Phosphate		0.069			
Potassium		7.1			
Silica			5.7		
Sodium		102			
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco D 3/2: 629 Total	Tenneco D 3/2: 629 Diss.	Tenneco D 3/2: 2312 Total	Tenneco D 3/2: 2312 Diss.
Arsenic	0.05	0.098			
Barium	1	0.553			
Cadmium	0.01	<0.01			
Chloride *	250				
Chromium (hex)	0.05				
Copper *	1	0.031			
Fluoride *	4				
Iron (tot)*	0.3				
Lead	0.05	0.014			
Manganese *	0.05	0.185			
Mercury	0.002				
Nitrate	10				
Selenium	0.01	<0.01			
Silver	0.05	0.067			
Sulfate *	1000				
Tot Diss Solids *	2000				
Turbidity	5				
Zinc *	5	0.455			
pH *	6.5-8.5				
Cyanide (T)				0.205	
Cyanide (Free)				0.008	
Cyanide (WAD)				0.019	
Alkalinity					
Ammonia					
Bicarbonate					
Boron		0.087			
Calcium					
Carbonate					
Chromium (diss)					
Chromium (Tot)		<0.01			
Conductivity					
Hardness					
Hydroxide					
Iron (diss) *					
Magnesium					
Molybdenum					
Nickel		0.131			
Nitrite					
Phosphate					
Potassium					
Silica					
Sodium					
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco D 3/2: Total	Tenneco D 3/2: Diss.	DEH Tenneco Mine BL SED Pond AB CNFL W E FK Beaver 03-06-91: 1400 Total	DEH Tenneco Mine BL SED Pond AB CNFL W E FK Beaver 03-06-91: 1400 Diss.
Arsenic	0.05			0.14	
Barium	1			0.13	
Cadmium	0.01			0.001	
Chloride *	250			912.4	
Chromium (hex)	0.05			0.015	
Copper *	1			0.091	
Fluoride *	4				
Iron (tot)*	0.3			4.4	
Lead	0.05			0.01	
Manganese *	0.05			0.36	
Mercury	0.002			0.0645	
Nitrate	10			11.0	
Selenium	0.01			0.03	
Silver	0.05			.05	
Sulfate *	1000			920.0	
Tot Diss Solids *	2000			3010	
Turbidity	5			380.0	
Zinc *	5			1.3	
pH *	6.5-8.5			8.2	
Cyanide (T)		1.71		0.168	
Cyanide (Free)		0.75			
Cyanide (WAD)		0.92			
Alkalinity				63	
Ammonia				37.4	
Bicarbonate				78	
Boron					
Calcium				380	
Carbonate				0	
Chromium (diss)					
Chromium (Tot)					
Conductivity				4,430	
Hardness				981.0	
Hydroxide				0	
Iron (diss) *					
Magnesium				8	
Molybdenum					
Nickel					
Nitrite				0.019	
Phosphate				0.102	
Potassium				9	
Silica					
Sodium				540.0	
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	JBR GS - 5 Site D 3/6: 1930		DEH Tenneco Mine Discharge TO E FK Beaver Dam Wash 03-07-91: 1315	
		Total	Diss.	Total	Diss.
Arsenic	0.05		<0.01		
Barium	1		0.18		
Cadmium	0.01		<0.01		
Chloride *	250	932			
Chromium (hex)	0.05		0.017		
Copper *	1		<0.05		
Fluoride *	4	1.04			
Iron (tot)*	0.3				
Lead	0.05		0.016		
Manganese *	0.05		0.054		
Mercury	0.002		<0.002		
Nitrate	10	7.96			
Selenium	0.01		0.047		
Silver	0.05		0.25		
Sulfate *	1000	867			
Tot Diss Solids *	2000	3,040			
Turbidity	5	28			
Zinc *	5		0.11		
pH *	6.5-8.5	7.66			
Cyanide (T)		3.64		<0.02	
Cyanide (Free)		1.61		<0.02	
Cyanide (WAD)		2.41			
Alkalinity		84.7			
Ammonia		31.6			
Bicarbonate		103			
Boron			0.032		
Calcium		183			
Carbonate		0			
Chromium (diss)			<0.01		
Chromium (Tot)					
Conductivity		4,300			
Hardness		490			
Hydroxide		0			
Iron (diss) *			0.508		
Magnesium		8.0			
Molybdenum					
Nickel			1.15		
Nitrite		1.86			
Phosphate		0.035			
Potassium		12.2			
Silica		2.4			
Sodium		498			
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco E 3/2: 632 Total	Tenneco E 3/2: 632 Diss.	Tenneco E 3/2: 1109 Total	Tenneco E 3/2: 1109 Diss.
Arsenic	0.05				
Barium	1				
Cadmium	0.01				
Chloride *	250				
Chromium (hex)	0.05				
Copper *	1				
Fluoride *	4				
Iron (tot)*	0.3				
Lead	0.05				
Manganese *	0.05				
Mercury	0.002				
Nitrate	10				
Selenium	0.01				
Silver	0.05				
Sulfate *	1000				
Tot Diss Solids *	2000				
Turbidity	5				
Zinc *	5				
pH *	6.5-8.5				
Cyanide (T)		0.365		1.20	
Cyanide (Free)		0.321		0.026	
Cyanide (WAD)		0.192		0.046	
Alkalinity					
Ammonia					
Bicarbonate					
Boron					
Calcium					
Carbonate					
Chromium (diss)					
Chromium (Tot)					
Conductivity					
Hardness					
Hydroxide					
Iron (diss) *					
Magnesium					
Molybdenum					
Nickel					
Nitrite					
Phosphate					
Potassium					
Silica					
Sodium					
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco E 3/2:		Tenneco E 3/4: 200	
		Total	Diss.	Total	Diss.
Arsenic	0.05				
Barium	1				
Cadmium	0.01				
Chloride *	250				
Chromium (hex)	0.05				
Copper *	1				
Fluoride *	4				
Iron (tot)*	0.3				
Lead	0.05				
Manganese *	0.05				
Mercury	0.002				
Nitrate	10				
Selenium	0.01				
Silver	0.05				
Sulfate *	1000				
Tot Diss Solids *	2000				
Turbidity	5				
Zinc *	5				
pH *	6.5-8.5				
Cyanide (T)		<0.005		2.0	
Cyanide (Free)		<0.005		0.126	
Cyanide (WAD)		<0.005		0.205	
Alkalinity					
Ammonia					
Bicarbonate					
Boron					
Calcium					
Carbonate					
Chromium (diss)					
Chromium (Tot)					
Conductivity					
Hardness					
Hydroxide					
Iron (diss) *					
Magnesium					
Molybdenum					
Nickel					
Nitrite					
Phosphate					
Potassium					
Silica					
Sodium					
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	Tenneco E 3/5: 2100 Total	Tenneco E 3/5: 2100 Diss.	JBR GS - 6 Site E 3/6: 2000 Total	JBR GS - 6 Site E 3/6: 2000 Diss.
Arsenic	0.05				<0.01
Barium	1				0.52
Cadmium	0.01				<0.01
Chloride *	250			27.9	
Chromium (hex)	0.05				
Copper *	1				<0.05
Fluoride *	4			0.23	
Iron (tot)*	0.3				
Lead	0.05				0.026
Manganese *	0.05				<0.01
Mercury	0.002				<0.002
Nitrate	10			0.08	
Selenium	0.01				<0.01
Silver	0.05				<0.01
Sulfate *	1000			49	
Tot Diss Solids *	2000			293	
Turbidity	5			31	
Zinc *	5				<0.01
pH *	6.5-8.5			8.37	
Cyanide (T)		7.0		0.029	
Cyanide (Free)		0.536		0.011	
Cyanide (WAD)		2.4		0.029	
Alkalinity				157	
Ammonia				0.24	
Bicarbonate				189	
Boron					0.018
Calcium				32.8	
Carbonate				1.2	
Chromium (diss)					<0.01
Chromium (Tot)				<0.01	
Conductivity				430	
Hardness				130	
Hydroxide				0	
Iron (diss) *					0.040
Magnesium				11.8	
Molybdenum					
Nickel					0.013
Nitrite				0.333	
Phosphate				0.14	
Potassium				1.6	
Silica				15.6	
Sodium				26.2	
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	JBR GS - 12 Site E 3/8: 1145		DEH E FK Beaver Dam Wash AB Beaver Dam Wash 04-03-91: 1715	
		Total	Diss.	Total	Diss.
Arsenic	0.05		<0.01		
Barium	1		0.081		
Cadmium	0.01		<0.01		
Chloride *	250	7.0			
Chromium (hex)	0.05				
Copper *	1		<0.02		
Fluoride *	4	0.11			
Iron (tot)*	0.3	0.055	<0.01		
Lead	0.05		<0.01		
Manganese *	0.05		<0.01		
Mercury	0.002		<0.0002		
Nitrate	10	0.76			
Selenium	0.01		<0.005		
Silver	0.05		<0.01		
Sulfate *	1000	64			
Tot Diss Solids *	2000	344			
Turbidity	5	2.0			
Zinc *	5		0.030		
pH *	6.5-8.5	8.27			
Cyanide (T)		<0.005		<0.02	
Cyanide (Free)		<0.005			
Cyanide (WAD)		<0.005			
Alkalinity		229			
Ammonia		<0.2			
Bicarbonate		274			
Boron			0.046		
Calcium		78.1			
Carbonate		2.0			
Chromium (diss)					
Chromium (Tot)		<0.01	<0.01		
Conductivity		511			
Hardness		237			
Hydroxide		0			
Iron (diss) *					
Magnesium		10.1			
Molybdenum					
Nickel			<0.01		
Nitrite		0.516			
Phosphate		0.035			
Potassium		4.1			
Silica		6.3			
Sodium		12.9			
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	JBR GS - 10 Main Fork B D Wash W. 3/8: 1045		DEH Beaver Dam Wash AB CNFL E E FK OF Beaver Dam Wash 04-03-91: 1730	
		Total	Diss.	Total	Diss.
Arsenic	0.05	<0.01	<0.01		
Barium	1	0.045	0.045		
Cadmium	0.01	<0.01	<0.01		
Chloride *	250	1.1			
Chromium (hex)	0.05	<0.01			
Copper *	1	<0.02	<0.02		
Fluoride *	4	0.47			
Iron (tot)*	0.3	0.018			
Lead	0.05	<0.01	<0.01		
Manganese *	0.05	<0.01	<0.01		
Mercury	0.002	<0.0002	<0.0002		
Nitrate	10	0.163			
Selenium	0.01	<0.005	<0.005		
Silver	0.05	0.01	<0.01		
Sulfate *	1000	21			
Tot Diss Solids *	2000	281			
Turbidity	5	2.90			
Zinc *	5	0.033	<0.01		
pH *	6.5-8.5	8.08			
Cyanide (T)		<0.005		<0.02	
Cyanide (Free)		<0.005			
Cyanide (WAD)		<0.005			
Alkalinity		161			
Ammonia		<0.2			
Bicarbonate		196			
Boron		0.050	0.049		
Calcium		29.8			
Carbonate		0			
Chromium (diss)					
Chromium (Tot)		<0.01	<0.01		
Conductivity		428			
Hardness		173			
Hydroxide		0			
Iron (diss) *			0.018		
Magnesium		12.5			
Molybdenum					
Nickel		<0.01	<0.01		
Nitrite		<0.005			
Phosphate		0.024			
Potassium		2.2			
Silica		17.2			
Sodium		18.2			
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	DEH Beaver Dam Wash BL CNFL W E FK Beaver Dam 03-06-91: 1500		DEH BDW BL CNFL E FK Beaver Dam Wash 03-07-91: 1215	
		Total	Diss.	Total	Diss.
Arsenic	0.05	<0.005			
Barium	1	0.042			
Cadmium	0.01	0.001			
Chloride *	250	19			
Chromium (hex)	0.05	<0.005			
Copper *	1	<0.02			
Fluoride *	4				
Iron (tot)*	0.3	0.4			
Lead	0.05	<0.005			
Manganese *	0.05	0.046			
Mercury	0.002	<0.0002			
Nitrate	10	0.392			
Selenium	0.01	<0.005			
Silver	0.05	<0.002			
Sulfate *	1000	33.0			
Tot Diss Solids *	2000	266			
Turbidity	5	27.0			
Zinc *	5	<0.02			
pH *	6.5-8.5	8.1			
Cyanide (T)		0.02		0.02	
Cyanide (Free)		<0.02		<0.02	
Cyanide (WAD)					
Alkalinity		147			
Ammonia		0.22			
Bicarbonate		180			
Boron					
Calcium		47			
Carbonate		0			
Chromium (diss)					
Chromium (Tot)					
Conductivity		375			
Hardness		162.5			
Hydroxide		0			
Iron (diss) *					
Magnesium		11			
Molybdenum					
Nickel					
Nitrite		<0.01			
Phosphate		0.081			
Potassium		3			
Silica					
Sodium		21.0			
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	JBR GS - 11 M Main Fork B D Wash Below 3/8: 1105		DEH BDW BL CNFL OF E FK Beaver Dam Wash 04-03-91: 1735	
		Total	Diss.	Total	Diss.
Arsenic	0.05	<0.01	<0.01		
Barium	1	0.048	0.048		
Cadmium	0.01	<0.01	<0.01		
Chloride *	250	24.6			
Chromium (hex)	0.05	<0.01			
Copper *	1	<0.02	<0.02		
Fluoride *	4	0.52			
Iron (tot)*	0.3	<0.01	<0.01		
Lead	0.05	<0.01	<0.01		
Manganese *	0.05	<0.01	<0.01		
Mercury	0.002	<0.0002	<0.0002		
Nitrate	10	0.285			
Selenium	0.01	<0.005	<0.01		
Silver	0.05	<0.01	<0.005		
Sulfate *	1000	36			
Tot Diss Solids *	2000	300			
Turbidity	5	2.10			
Zinc *	5	0.093	<0.01		
pH *	6.5-8.5	7.97			
Cyanide (T)		<0.005		<0.02	
Cyanide (Free)		<0.005			
Cyanide (WAD)		<0.005			
Alkalinity		166			
Ammonia		<0.2			
Bicarbonate		202			
Boron		0.059	0.055		
Calcium		54.9			
Carbonate		0			
Chromium (diss)					
Chromium (Tot)		<0.01	<0.01		
Conductivity		438			
Hardness		181			
Hydroxide		0			
Iron (diss) *					
Magnesium		14.5			
Molybdenum					
Nickel		<0.01	<0.01		
Nitrite		<0.005			
Phosphate		0.022			
Potassium		2.3			
Silica		16.8			
Sodium		11.8			
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	DEH Beaver Dam Wash AB CNFL W Virgin R 03-06-91: 1700		DEH Virgin R BL CNFL W Beaver Dam Wash At Littlef 03-06-91: 1730	
		Total	Diss.	Total	Diss.
Arsenic	0.05	0.005		0.02	
Barium	1	0.071		0.15	
Cadmium	0.01	<0.001		<0.001	
Chloride *	250	24.5		170	
Chromium (hex)	0.05	<0.005		0.021	
Copper *	1	<0.02		0.06	
Fluoride *	4				
Iron (tot)*	0.3	0.069		7.6	
Lead	0.05	<0.005		0.02	
Manganese *	0.05	0.038		1.2	
Mercury	0.002	<0.0002		<0.0002	
Nitrate	10	0.947		0.423	
Selenium	0.01	<0.005		<0.005	
Silver	0.05	<0.002		<0.002	
Sulfate *	1000	110.0		890.0	
Tot Diss Solids *	2000	446		1700	
Turbidity	5	36.0		<1000.0	
Zinc *	5	<0.02		0.089	
pH *	6.5-8.5	8.0		7.5	
Cyanide (T)		<0.02		<0.02	
Cyanide (Free)		<0.02		<0.02	
Cyanide (WAD)					
Alkalinity		221		177	
Ammonia		0.07		0.11	
Bicarbonate		270		216	
Boron					
Calcium		80		300	
Carbonate		0		0	
Chromium (diss)					
Chromium (Tot)					
Conductivity		672		2,060	
Hardness		290.1		933.7	
Hydroxide		0		0	
Iron (diss) *					
Magnesium		22		45	
Molybdenum					
Nickel					
Nitrite		<0.01		<0.01	
Phosphate		0.042		1.234	
Potassium		4		12	
Silica					
Sodium		35.0		120.0	
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	JBR GS - 9 Equipment Blank 3/8: 1015		DEH E FK BDW AB Tenneco Gold 5.M 03-06-91: 1215	
		Total	Diss.	Total	Diss.
Arsenic	0.05	<0.01	<0.01	<0.005	
Barium	1	0.028		0.067	
Cadmium	0.01	<0.01	<0.01	<0.001	
Chloride *	250	33.1		21.5	
Chromium (hex)	0.05	<0.01		<0.005	
Copper *	1	<0.02	<0.02	<0.02	
Fluoride *	4	<0.1			
Iron (tot)*	0.3	<0.01		0.49	
Lead	0.05	<0.01	<0.01	<0.005	
Manganese *	0.05	<0.02	<0.01	0.077	
Mercury	0.002	<0.0002	<0.0002	<0.0002	
Nitrate	10	0.012		0.047	
Selenium	0.01	<0.005	<0.005	<0.005	
Silver	0.05	0.013	<0.01	<0.002	
Sulfate *	1000	<0.5		24	
Tot Diss Solids *	2000	10		258	
Turbidity	5	0.15		29	
Zinc *	5	0.043	0.021	<0.02	
pH *	6.5-8.5	5.43		8.1	
Cyanide (T)		<0.005		<0.02	
Cyanide (Free)		<0.005		<0.02	
Cyanide (WAD)		<0.005			
Alkalinity		1.9		150	
Ammonia		<0.02		0.05	
Bicarbonate		2.3		184	
Boron		<0.01	<0.01		
Calcium		0.4		44	
Carbonate		0		0	
Chromium (diss)			<0.01		
Chromium (Tot)		<0.01		<5.0	
Conductivity		<5		372	
Hardness		<1		163.3	
Hydroxide		0		0	
Iron (diss) *			<0.01	0.085	
Magnesium		<0.1		13	
Molybdenum					
Nickel		<0.01	<0.01		
Nitrite		<0.005		<0.01	
Phosphate		<0.01		0.157	
Potassium		<0.1		2	
Silica		<0.1			
Sodium		1.4		590	
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	JBR GS - 4 E. Fork B D Wash Above 3/6: 1855		DEH E Fk Beaver Dam Wash AB Tenneco 4/3: 1515	
		Total	Diss.	Total	Diss.
Arsenic	0.05		<0.01		
Barium	1		0.069		
Cadmium	0.01		<0.01		
Chloride *	250	21.4			
Chromium (hex)	0.05				
Copper *	1		<0.05		
Fluoride *	4	0.17			
Iron (tot)*	0.3	1.01			
Lead	0.05		<0.01		
Manganese *	0.05		<0.01		
Mercury	0.002		<0.002		
Nitrate	10	0.02			
Selenium	0.01		<0.01		
Silver	0.05		<0.01		
Sulfate *	1000	9.6			
Tot Diss Solids *	2000	269			
Turbidity	5	32			
Zinc *	5		<0.01		
pH *	6.5-8.5	8.28			
Cyanide (T)		<0.005		<0.02	
Cyanide (Free)		<0.005			
Cyanide (WAD)		<0.005			
Alkalinity		146			
Ammonia		<0.2			
Bicarbonate		174			
Boron			0.034		
Calcium		27.1			
Carbonate		2.2			
Chromium (diss)			<0.01		
Chromium (Tot)		<0.01			
Conductivity		375			
Hardness		115			
Hydroxide		0			
Iron (diss) *			0.060		
Magnesium		11.4			
Molybdenum					
Nickel			<0.01		
Nitrite		0.450			
Phosphate		0.15			
Potassium		1.3			
Silica		15.2			
Sodium		18.5			
Vanadium					

* The standard noted is a Secondary Stnd

Table 2. Surface Water Samples

Parameter Conc. in mg/l	Drinking Water Standards	JBR GS - 3 Arsenic Gulch 3/6: 1630		JBR GS - 8 East Fork B D Wash Above 3/8: 1000	
		Total	Diss.	Total	Diss.
Arsenic	0.05		0.015	<0.01	<0.01
Barium	1		0.22	0.096	0.096
Cadmium	0.01		<0.01	<0.01	<0.01
Chloride *	250	7.0		29.9	
Chromium (hex)	0.05		<0.01	<0.01	
Copper *	1		<0.05	<0.02	<0.02
Fluoride *	4	0.11		0.28	
Iron (tot)*	0.3	0.055		0.035	
Lead	0.05		<0.01	<0.01	<0.01
Manganese *	0.05		<0.01	0.024	0.023
Mercury	0.002		<0.002	<0.0002	<0.0002
Nitrate	10	0.76		<0.344	
Selenium	0.01		<0.01	<0.005	<0.005
Silver	0.05		<0.01	<0.01	
Sulfate *	1000	64		84	
Tot Diss Solids *	2000	344		415	
Turbidity	5	2.0		4.0	
Zinc *	5		<0.01	0.073	0.023
pH *	6.5-8.5	8.27		8.39	
Cyanide (T)		<0.005		<0.005	
Cyanide (Free)		<0.005		<0.005	
Cyanide (WAD)		<0.005		<0.005	
Alkalinity		229		219	
Ammonia		<0.2		<0.2	
Bicarbonate		274		258	
Boron			0.033	0.063	0.051
Calcium		78.1		54.1	
Carbonate		2.0		4.6	
Chromium (diss)			<0.01		<0.01
Chromium (Tot)		<0.01		<0.01	
Conductivity		511		651	
Hardness		237		297	
Hydroxide		0		0	
Iron (diss) *			0.033		0.020
Magnesium		10.1		30.9	
Molybdenum					
Nickel			0.022	<0.01	<0.01
Nitrite		0.516		0.005	
Phosphate		0.035		0.038	
Potassium		4.1		1.7	
Silica		6.3			11.2
Sodium		12.9		24.6	
Vanadium					

* The standard noted is a Secondary Stnd

TABLE 3

RESULTS OF AVAILABLE GROUND WATER QUALITY DATA

Table 3. Monitor Well Samples

Parameter Conc. in mg/l	Drinking Water Standards	DG-1-008 Monitor Well Samples 2-15-91		UG-1-008 Monitor Well Samples 2-15-91	
		Total	Diss.	Total	Diss.
Cadmium	0.01	0.01		<0.01	
Chloride *	250	85		60	
Copper *	1	0.04		0.03	
Fluoride *+	4	1.04		0.62	
Nitrate	10	<0.01		<0.01	
Silver	0.05	<0.01		<0.01	
Sulfate *+	1000	500		<10	
Tot Diss Solids *+	2000	920		410	
Cyanide (T)		<0.002		<0.002	
Cyanide (Free)		<0.002		<0.002	
Ammonia		0.72		0.58	
Bicarbonate		2220		534	
Calcium		183		60.1	
Magnesium		69.1		40.6	
Potassium		49.1		13.7	
Sodium		43.1		32.4	
Gold		<0.01		<0.01	
Cobalt					

* The standard noted is a Secondary Drinking Water Standard
Sulfate 250 mg/l
TDS 500 mg/l
Fluoride 2 mg/l

Negative numbers indicate less than concentration shown (not detected).

Table 3. Monitor Well Samples

Parameter Conc. in mg/l	Drinking Water Standards	DG-01-OB6&007 Monitor Well Samples 1-1-/1-24-91		UG-1 & 006 Monitor Well Samples 1-10-91	
		Total	Diss.	Total	Diss.
Cadmium	0.01	0.015		<0.01	
Chloride *	250	78		62	
Copper *	1	0.04		0.013	
Fluoride *+	4	0.98		0.71	
Nitrate	10	0.29		<0.01	
Silver	0.05	<0.01		<0.01	
Sulfate *+	1000	486		<10	
Tot Diss Solids *+	2000	1008		536	
Cyanide (T)		<0.002		<0.002	
Cyanide (Free)		<0.002		<0.002	
Ammonia		0.64		0.86	
Bicarbonate		2529		332	
Calcium		0.015		51.2	
Magnesium		68.9		40.4	
Potassium		52.9		12.2	
Sodium		45.6		31.1	
Gold		<0.01		<0.01	
Cobalt					

Table 3. Monitor Well Samples

Parameter Conc. in mg/l	Drinking Water Standards	DG Monitor Well Samples 3-28-91		UG Monitor Well Samples 3-28-91	
		Total	Diss.	Total	Diss.
Cadmium	0.01	<0.01		<0.01	
Chloride *	250	117			
Copper *	1	0.033		0.01	
Fluoride *+	4	1.12		0.74	
Nitrate	10	0.227		0.034	
Silver	0.05	<0.01		<0.01	
Sulfate *+	1000	540		29.8	
Tot Diss Solids *+	2000	1050		980	
Cyanide (T)		<0.002		<0.002	
Cyanide (Free)		<0.002		<0.002	
Ammonia		9.14		0.18	
Bicarbonate		930		260	
Calcium		285		46.7	
Magnesium		70.7		42.7	
Potassium		50.1		11.9	
Sodium		48.7		29.1	
Gold		<0.01		<0.01	
Cobalt		<0.01		<0.01	

Table 3. Monitor Well Samples

Parameter Conc. in mg/l	Drinking Water Standards	UG-1 & 006 Monitor Well Samples 1-10-91		DG- 1 - OB6 & 007 Monitor Well Samples 1-10 / 1-24-91	
		Total	Diss.	Total	Diss.
Cadmium	0.01	<0.01		0.015	
Chloride *	250	62		78	
Copper *	1	0.013		0.04	
Fluoride *+	4	0.71		0.98	
Nitrate	10	<0.01		0.29	
Silver	0.05	<0.01		<0.01	
Sulfate *+	1000	<10		486	
Tot Diss Solids *+	2000	536		1008	
Cyanide (T)		<0.002		<0.002	
Cyanide (Free)		<0.002		<0.002	
Ammonia		0.86		0.64	
Bicarbonate		332		2529	
Calcium		51.2		299	
Magnesium		40.4		68.9	
Potassium		12.2		52.9	
Sodium		31.1		45.6	
Gold		<0.01		<0.01	
Cobalt					